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EXAMINER	
EISEN, ALEXANDER	
ART UNIT	**PAPER NUMBER**
2674	

DATE MAILED: 02/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/816,742	LUEDER, ERNST H.	
	Examiner	Art Unit	
	Alexander Eisen	2674	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-88* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28,30-58,60-86 and 88* is/are rejected.

7)☒ Claim(s) *29,59 and 87* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 July 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because the error in FIG. 13 – upper cell on the right. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 17, 47 and 75 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 17, 47 and 75 are also rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims recite "the sensor includes: a variable resistor, wherein the resistance of the variable resistor corresponds to the combined brightnesses of multiple optical cells; and a current source connected to the variable resistor to provide a current to the variable resistor; wherein the current source supplies only the variable resistor, the brightness signal includes a voltage across the variable resistor, and a sensitivity of the sensor may be increased by increasing the current provided by the current source". As have been stated above, the specification does not provide an adequate description for these limitations, their purpose, structure or connectivity, which besides the enablement issues render claims indefinite.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 24-25, 31, 54-55, 61 and 82-83 are rejected under 35 U.S.C. 102(e) as being anticipated by Johnson, US 6,424,330.

With respect to claims 1, 31 and 61 Johnson discloses a brightness control circuit for controlling the brightness of an optical cell in a display system including a display, comprising a sensor (FIG, 7) configured to provide a signal corresponding to the brightness of the optical cell 18; a control circuit 15 connected to the optical cell and configured to adjust the brightness of the optical cell according to the sensed brightness of the optical cell (FIGS. 6-7; col. 4, ll. 25-67).

As to claims 24, 54 and 82, the display is LCD display.

As to claims 25, 55 and 83, Johnson further teaches that the sensor comprises a node connected to the liquid crystal cell (see FIG. 7; col. 4, ll. 38-42).

8. Claims 1-3, 31-33 and 61-63 are rejected under 35 U.S.C. 102(e) as being anticipated by Iwata et al., ("Iwata"), US 6,812,651 B2.

With respect to claims 1, 31 and 61 Iwata discloses a brightness control circuit for controlling the brightness of an optical cell in a display system including a display, comprising a sensor 24 configured to provide a signal corresponding to the brightness of the optical cell 6; a control circuit Tr3-Tr6 connected to the optical cell and configured to adjust the brightness of the optical cell according to the sensed brightness of the optical cell (FIG. 3; col. 7, line 44 – col. 8, line 22).

As to claims 2-3, 32-33 and 62-63, the control circuit includes a comparison circuit and a differential amplifier Tr3-Tr4 to compare the brightness signal to a target value Vs; and the control circuit is configured to stop adjusting the brightness of the optical cell when the

comparison circuit indicates that the brightness signal is within a selected range of or identical to the target value.

9. Claims 1, 19, 28, 30-31, 49, 58-61, 77, 86 and 88 are rejected under 35 U.S.C. 102(e) as being anticipated by Kane, US 6,229,508.

With respect to claims 1, 31 and 61 Kane discloses a brightness control circuit for controlling the brightness of an optical cell in a display system including a display, comprising a sensor 1334 configured to provide a signal corresponding to the brightness of the optical cell LED; a control circuit (FIG. 10) connected to the optical cell and configured to adjust the brightness of the optical cell according to the sensed brightness of the optical cell (FIGS.13 and 16).

As to claims 19, 49 and 77, Kane further teaches that the optical cell includes a capacitor 302 (FIG. 3) for storing a charge corresponding to the brightness of the optical cells; and the control circuit is configured to discharge (autozero) the capacitor to a substantially known charge before adjusting the brightness of the optical cell according to the sensed signal (FIGS. 3-4; col. 3, line 47 – col. 4, line 53).

As to claims 28, 30, 58, 60, 86 and 88, Kane further discloses that multiple optical cells are configured in multiple columns and multiple rows; the sensor includes a column sensor connected to a column of optical cells, wherein the sensor is configured to sense a brightness sum signal corresponding to the sum of the brightnesses of multiple optical cells in the column (FIG. 13; col. 12, line 18 – col. 13, line 52).

10. Claims 1-2, 4, 7, 10-12, 14-16, 18, 20-23, 27, 31-32, 37, 40-42, 44-46, 18, 50-53, 57, 61-62, 67, 70, 71, 73-74, 76, 78-81, 85 are rejected under 35 U.S.C. 102(e) as being anticipated by Shodo, US 6,404,137 B1.

With respect to claims 1, 31 and 61 Shodo discloses a brightness control circuit for controlling the brightness of an optical cell in a display system including a display, comprising a sensor 2 configured to provide a signal corresponding to the brightness of the optical cell 1; a control circuit 31-32 connected to the optical cell and configured to adjust the brightness of the optical cell according to the sensed brightness of the optical cell (FIGS. 1-2; col. 2, lines 6-17).

As to claims 2, 32 and 62, the control circuit includes a comparison circuit 32 to compare the brightness signal to a target value Vs; and the control circuit is configured to stop adjusting the brightness of the optical cell when the comparison circuit indicates that the brightness signal is within a selected range of or identical to the target value.

As to claims 7, 37 and 67 Shodo further discloses a current source 31 to provide a current to the cell according to the difference between the brightness signal and a target value.

As to claims 10 and 40, Shodo discloses that sensor includes a resistor R connected to the optical cell 1 to sense the current provided to the optical cell (the brightness of the cell is a function of current flowing through the cell).

As to claims 11 and 41, Shodo discloses that the sensor includes a resistor R connected between the optical cell 1 and the control circuit 31-32 (coupled to the cell 1 through the photodiode 2 and the switch 42 and located between the cell 1 and the control circuit 32).

As to claims 12 and 42 Shodo discloses that the sensor includes a resistor R connected between the control circuit 31-32 and the found (FIG. 1).

As to claims 14 and 44, Shodo also teaches that the sensor includes a resistor R configured to be selectively (switches 41 and 42) connected to multiple optical cells.

As to claims 15, 45 and 73, Shodo provides for the sensor including a resistor R connected to an optical element in the optical cell; and the resistor is configured to be selectively connected to the control circuit.

As to claims 16, 46 and 74, Shodo also teaches that the optical cell includes an OLED; and the resistor is connected between an anode of the OLED and ground (see FIG. 1).

As to claims 18 and 48, Shodo discloses that the control circuit is configured to set the optical cell to a substantially known brightness (target signal Vs) before adjusting the brightness of the optical cell according to the sensed signal.

As to claims 20, 50 and 78, Shodo also discloses that the control circuit is further configured to substantially maintain the adjusted brightness of the optical cell according to the sensed signal for a remaining duration of a row address cycle (i.e. during activation of switches 41-42).

As to claims 21, 51 and 79, Shodo discloses that the control circuit includes a comparison circuit to compare the sensed brightness to a target value; and the control circuit is configured to maintain the brightness of the optical cell within a selected range of or identical to the target value.

As per claims 22, 52 and 80, the control circuit includes a power source and a power sink; and is configured to adjust the brightness of the optical cell according to the sensed signal by selectively connecting the optical cell to the power source and the power sink (cell 1 is

selectively connected to the power source Vcc through the transistor 31 being always connected to the power sink – ground).

As to claims 23, 53 and 81, the sensor senses a first signal corresponding to a brightness of a first optical cell and a second signal corresponding to the brightness of a second optical cell; and the control circuit independently adjusts the brightness of the first optical cell according to the first signal and the brightness of the second optical cell according to the second signal.

As per claims 27, 57 and 85 multiple optical cells are configured in multiple columns and multiple rows; the sensor includes a column sensor connected to a column of optical cells, wherein the sensor is configured to sense a sequential signal corresponding to brightnesses of multiple optical cells in the column (col. 5, ll. 28-37).

As to claim 70, each sensor 2 includes a resistor R connected to a dedicated column to sense the current provided to the column.

As to claim 71, each sensor 2 includes a resistor R connected to a dedicated column 7 and configured to be selectively connected (through switches 41-42; see FIG. 2) to each optical cell in the dedicated column to sense the current through the optical cell.

As to claim 76 the feedback circuit is configured to store a selected value in the storage element (capacitor 5) before adjusting the value according to the input signal and the brightness signal (col. 5, ll. 36-44; it's understood that in order to activate feedback, the OLED needs to be activated by initial charge on the capacitor 5, which would correspond to a target value) .

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 4, 34 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shodo in view of Dawson et al., US 6,229,506 B1.

Shodo discloses a brightness control circuit for controlling the brightness of an optical cell in a display system including a display, comprising a sensor 2 configured to provide a signal corresponding to the brightness of the optical cell 1; a control circuit 31-32 connected to the optical cell and configured to adjust the brightness of the optical cell according to the sensed brightness of the optical cell.

Shodo does not disclose, however, that the control circuit is configured to overdrive the optical cell.

Dawson teaches that overdriving the optical cell can beneficial because it would allow to compensate the threshold variation on the polysilicon TFT, and therefore it would have been obvious to one of ordinary skill in the art at the time when the invention was made to implement overdriving in the display of Shodo.

13. Claims 5-6, 8-9, 13, 26, 35-36, 38-39, 43, 56, 65-66, 68-69, 72, 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shodo in view of Kapoor et al., (hereinafter Kapoor), US 5,812,104.

Shodo discloses a brightness control circuit for controlling the brightness of an optical cell in a display system including a display, comprising a sensor 2 configured to provide a signal corresponding to the brightness of the optical cell 1; a control circuit 31-32 connected to the

optical cell and configured to adjust the brightness of the optical cell according to the sensed brightness of the optical cell.

Shodo does not disclose, however, how the target value is produced and supplied to the comparison circuit 32.

With respect to claims 5, 35 and 65 Kapoor teaches that ramp voltage is used conventionally to produce a driving voltage for pixels in LED matrix displays (col. 1, line 55 – col. 2, line 19; FIG.1).

It would have been obvious to one of ordinary skill in the art at the time when the invention was made to complement the display of Shodo with the ramp voltage source of Kapoor, because it would allow to generate gray scale voltages for pixels individually and thus to independently control them (col. 2, ll. 13-19).

As to claims 6, 36 and 66, Kapoor further teaches using step ramp variable source (see FIGS. 6-7; col. 5, ll.5-56).

As to claims 8, 38 and 68, Kapoor further teaches that the control circuit includes a variable signal generator selectively connectable to the optical cell to provide a varying signal to the optical cell to adjust the optical cell brightness; and Shodo further teaches a current source selectively connectable to the optical cell to provide a current to the optical cell to adjust the optical cell brightness.

As to claims 9, 39 and 69, Shodo further teaches that the target signal Vs, which would be produced by the variable signal generator of Kapoor, is fed simultaneously and selectively (through switches 41 and 42; FIG. 1) to the optical cell 1.

As to claims 13, 43 and 72 Shodo also teaches the optical cell includes a control transistor configured to control the brightness of the optical cell. It would have been obvious to one of ordinary skill in the art at the time when the invention was made that the transistors can be operated in either saturated or in subsaturated mode without bringing any unexpected result.

As to claims 26, 56 and 84 multiple optical cells are configured in multiple columns and multiple rows; and the control circuit includes a variable signal source to simultaneously provide a varying signal to the optical cells in multiple columns to adjust the individual brightnesses of the optical cells.

Allowable Subject Matter

14. Claims 29, 59 and 87 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter: none of the references, either singularly or in combination, teach or fairly suggest a brightness control circuit for controlling the brightness of an optical cell, comprising a sensor configured to provide a signal corresponding to the brightness of the optical cell; a control circuit connected to the optical cell and configured to adjust the brightness of the optical cell according to the sensed brightness of the optical cell, and wherein multiple optical cells are configured in multiple columns and multiple rows; the sensor includes a column sensor connected to a column of optical cells, wherein the sensor is configured to sense a brightness sum signal corresponding to the sum of the brightnesses of multiple optical cells in the column, while the control circuit is

configured to determine the brightness of a single optical cell in the column of optical cells according to a change in the brightness sum signal.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hack et al., US 2002/0030647, discloses a current sensor and amplifier used for calibrating an optical matrix display.

Libsch et al., US 2004/0065297, discloses a current source and amplifiers used for controlling pixel brightness.

Blouin, US 5,850,205, discloses an LCD having a sensor and feedback control for pixel brightness.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Eisen whose telephone number is (703) 306-2988. The examiner can normally be reached on M-F (9:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (703) 305-4938. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alexander Eisen
Primary Examiner
Art Unit 2674

26 January 2005